EE Workshop, 12 - 14 March, 2002

http://hepwww.rl.ac.uk/CMSecal/Workshops.htm

GOALS

- **Agree and define the scope of the next EE EDR**
- **Agree the date for the next EE EDR**
- **Agree/update the design parameters for EE**
- **Present and record the current mechanical design for backplates, env screen, ring flange, EE/HE mounting, installation in CMS.**
- **Present and record the current services requirements.**
- **Record the issues that need resolving before the next EE EDR**
- **Assign an action list of tasks that need to be completed before the EDR, and by whom.**

Scope of the next EE EDR

Approve the design of :

- **the Dee Backplates**
- **the Positional Spacers**
- **the Environmental Screen**
- **the Ring Flange**

and give approval to proceed to tender.

Present the tooling/installation scenario in CMS and show full compatibility.

Pre EE EDR meeting, compatibility with CMS, Fri 17 May, 2002
EE EDR, 3-4 Sep, 2002

EE Design Requirements

1) Installation/Dismounting

It must be possible to mount/dismount a single Dee to HE with or without the beam pipe in position.

It must be possible to mount/dismount a single Dee with or without the second Dee in its final position.

2) Maintenance of the Dees

Following from 1) if one Dee has a problem it must be possible to mount/dismount the Dee without moving or uncabling the neighbouring Dee.

The guidelines imply that a Dee would first be loosened (slightly) and then moved horizontally away from the other Dee, along the x axis.

The Dee would then be brought forward (towards the IP) to clear the HE nose before being taken away by crane.

EE Workshop, 12 - 14 March, 2002

Actions :

- **Agree/update the design parameters for EE**
  None changed during workshop
  Use of 10 mm shim by EE possible, case must be made

- **Holes for EE to HE mounting, needed by Nov, 2002**
  Avoid drilling after HE megatyles installed
  Need EE/HE template or equivalent
  Need final array of holes specified **JH/AS**
  Holes for cable trunking on HE, also Nov 2002 ? **AS**

- **Dee/positional spacers – strongly advise done by same company**
  A tender option – company to do pre-assembly
  Choice of alloy very important for backplate stability

Actions (contd)

- **Need agreement for h = 3.**
  h = 3 area agreed during workshop

- **Not a good idea to design EE without the service constraints**
  Don't separate EE patch panel design from the 53° crack issues
  Manifolding difficulty at HE nose – need many pipes, cables.

- **Mounting of Dee not yet defined.**
  Workshop made progress. HE holes agreed.
  Want table of hole/size coordinates signed off **JH/AS**
  Deformation of support riser when demounting Dee – worry **AS**

- **Need to include radiation shielding on dismounted Dee** **AS**

- **Temperature stabilization of SE during Dee maintenance**

http://hepwww.rl.ac.uk/CMSecal/Workshops.htm

Workshops

EE Workshop, 12-14 March, 2002

Conclusions and action list	**D Cockerill, pdf**
Services issues	**J Greenhalgh, ppt**
Agenda	**doc**
Tue, March 12, 2002	
Goals	**D Cockerill, doc**
Pre EDR intro, EE planning & critical paths	**J Greenhalgh, ppt pdf**
Proposed scope of next EDR	**D Cockerill, doc**
Design criteria for EE mounting/dismounting	**D Cockerill, doc**
Wed (am), March 13, 2002	
EE Mechanical design	**J Hill, doc**
Environmental Screen	**A Levine, dxf-zip**
Dee Assembly	**G Barber, doc**
EE fibre optic routing, Dee MEM box	**M Anfreville, doc**
Mechanical FEA - background	**J Greenhalgh, A Abramov ppt pdf**
EE/HE FEA analysis	**A Abramov, doc**

Installation in CMS	**A Surkov, doc**
Wed (pm), March 13, 2002	
ECAL cooling system	**P Baillon, ppt**
EE Thermal issues	**J Greenhalgh, ppt pdf**
Thermal FEA, backplate	**A Riabov,J Greenhalgh ppt**
Thermal FEA, front environmental screen	**A Riabov,J Greenhalgh, ppt**
Thermal FEA, outer environmental screen	**A Riabov,J Greenhalgh, ppt**
Thermal FEA, eta = 3 region	**I Wichrowska-Polok, ppt**
Thermal FEA, eta = 3 region, cross section	**I Wichrowska-Polok, doc**
EE Services	**S Bally, pdf**
EE Services	**P Ingenito, pdf**
EE Services	**J Greenhalgh, ppt pdf**
Thursday, March 13, 2002	
Overview - ECAL Electronics	**P Sharp, doc**
Electronics integration in EE	**A Lodge, doc**
Low voltage issues	**W Lustermann, doc**
VPT High voltage system	**R Brown, ppt**
VPT mass production status	**R Brown, ppt**
EE Trigger Issues	**K Bell, doc**

EE Workshop

Dee mechanics

Mechanical FEA – encouraging

2 tonne maximum load on any bolt

Safe to go ahead with current design for EE to HE mounting

Actions: **JH/AL/AS**

- **Define slots thru backplate**
- **Holes on rear of backplate for studding to support moderator/electronics**
- **Eta=3 holes,**
- **Side panel holes**
- **Env. Screen holes**

Dee Assembly

- **A fully prototyped SC loader to be tested before the EDR** **GB**

EE Workshop

Mechanical design issues:

- **Any Dee in any position on CMS – not clear**
- **Electrical insulation from HE – needs discussion. May CMS Electronics workshop.**
- **Thermal insulation, HE to EE – needs discussion**

- **Clearance of Dee past SE cone** **AS/JH**
- **Clearance of 'bump stop' during mounting/dismounting** **AS/JH**
- **Complex dismounting/mounting interactions with SE** **AS/PW**

- **Question of side plate, for cooling at test beam**
- **Radius of edge of environmental screen for SE cables**
- **Check clearance definition for outer envelope of environmental screen** **AS/GF**

- **Problem of interference with support ring and fixed fittings over HE nose** **AS**

Question of dummy SE
Question of Dee 'zip' to join environmental screens of adjacent Dees

EE Workshop

Thermal issues

- h = 3 OK. No cooling pipes needed on inner thermal screen
- Environmental screen OK in current design – no changes needed

Services

- Route from cooling station to detector described
- Must interact closely with integration group S Bally, P Ingenito
- Pipe insulation more important for EE – have thinner pipes than EB **OT**

- ‘Double MEM’ box integration – problem of connectivity **PI/MA**

EE Workshop

Electronics

- **HV system for VPTs – layout & requirements**
  Component irradiation results
- **VPT production status reported**

Integration of electrical/optic services

- **LV services – need to know which scheme** **Delay impeding design**
- **Fibre optic services – need to know which type** **Delay impeding design**
- **Integration of new electronics** **Unresolved**
- **Cooling of all components** **Unresolved**
- **Major issue - forming trigger towers in the EE** **Unresolved**
  Easter – agree pattern, May/June – simulation results

Max allowed temperature of chips Unresolved